

What is Claimed is:

1. A gyroscopic mixer for mixing the contents of a closed container, the mixer comprising:

5 a motor coupled to a bracket, the motor imparting rotational movement to the bracket about a first axis,

the bracket being rotatively connected to a pulley gear that is enmeshed with a stationary annular gear that is concentric about the first axis and which defines a circular gear path about the first axis, the pulley gear moving along the circular gear path as the bracket rotates about the first axis,

10 the pulley gear being connected to a drive pulley, the pulley gear and drive pulley defining a second axis, the pulley gear and drive pulley spinning about the second axis as the pulley gear moves along the circular gear path of the annular gear,

15 the bracket also being rotatively connected to a driven pulley, the drive and driven pulleys being coupled together,

the bracket also being rotatively connected to a clamp assembly that is rotatively coupled to a driven platform, the driven pulley being connected to a drive platform, the driven pulley, drive platform and driven platform being disposed along a third axis,

20 the clamp assembly being capable of adjusting an axial spacing between the driven and drive platforms and providing a clamping force on the container when disposed therebetween,

25 the spinning of the pulley gear and drive pulley about the second axis resulting in spinning of the driven pulley, drive platform and driven platform about the third axis.

2. The mixer of claim 1 wherein the drive and driven pulleys are coupled together by an endless belt.

30 3. The mixer of claim 2 wherein the endless belt is a toothed endless belt and the drive and driven pulleys each comprise a plurality of slots for receiving teeth of the endless belt.

4. The mixer of claim 1 wherein the motor is coupled to the bracket by a drive shaft assembly.

5. The mixer of claim 4 wherein the drive shaft assembly comprises a primary drive shaft connected to the motor and a secondary drive shaft connected to the bracket, the primary and secondary drive shafts being coupled together with a flexible bushing disposed therebetween.

6. The mixer of claim 1 wherein the bracket is c-shaped with a generally vertical middle arm disposed between generally horizontal first and second arms, the middle arm being connected to the motor, the first arm being connected to the clamp assembly and supporting the driven platform, the second arm rotatively supporting the drive and driven pulleys and the drive platform.

7. The mixer of claim 6 wherein the pulley gear is supported by the middle arm and is connected to the drive pulley by a generally vertical shaft that is generally parallel to the middle arm.

8. The mixer of claim 1 wherein the clamp assembly comprises a threaded shaft threadably connected to the first arm of the bracket and fixedly connected to a clamp member, the clamp member being rotatively connected to the driven platform.

9. The mixer of claim 1 wherein the bracket is c-shaped with a generally vertical middle arm disposed between generally horizontal first and second arms, the middle arm being connected to the motor, the first arm being connected to the clamp assembly and supporting the driven platform, the second arm rotatively supporting the drive and driven pulleys and the drive platform, the middle arm comprising a recess in which the pulley gear is partially received,

30

10. The mixer of claim 1 wherein the motor is coupled to the bracket by a drive shaft that passes through a casing, the casing comprising an annular flange that is connected to the annular gear.

11. The mixer of claim 1 further comprising a housing with an opening providing access to the clamp assembly and drive and driven platforms, the housing also comprising a bottom panel,

the mixer further comprising a wedge support disposed beneath the bottom panel of the housing to support the mixer so that the second and third axes are not vertical and the first axis is not horizontal.

12. A gyroscopic mixer for mixing the contents of a closed container, the mixer comprising:

10 a motor,

a c-shaped bracket comprising a middle leg disposed between a first leg and a second leg, the first leg being connected to a clam assembly, the second leg being connected to a driven pulley,

the motor being directly coupled to the middle leg of the bracket by a drive shaft assembly that imparts rotational movement to the bracket about a first axis without a pulley,

the drive shaft assembly passing through a casing that is disposed between the motor and bracket, the casing comprising an annular flange that faces the bracket and which is connected to a stationary annular gear set that also faces the bracket and which is concentric about the first axis,

the bracket being rotatively connected to a pulley gear that is enmeshed with the annular gear set, the pulley gear moving along the annular gear as the bracket rotates about the first axis,

the pulley gear being connected to a drive pulley by pulley shaft, the pulley gear, pulley shaft and drive pulley defining a second axis, the pulley gear, pulley shaft and drive pulley spinning about the second axis as the pulley gear moves along the circular gear path of the annular gear,

the drive and driven pulleys being coupled together by an endless belt,

the clamp assembly that is rotatively coupled to a driven platform, the driven pulley being connected to a drive platform, the driven pulley, drive platform and driven platform being disposed along a third axis,

the clamp assembly being capable of adjusting an axial spacing between the driven and drive platforms and providing a clamping force on the container when disposed therebetween,

the spinning of the pulley gear and drive pulley about the second axis resulting in spinning of the driven pulley, drive platform and driven platform about the third axis.

5                    13.     The mixer of claim 12 wherein the endless belt is a toothed endless belt and the drive and driven pulleys each comprise a plurality of slot for receiving teeth of the endless belt.

10                   14.     The mixer of claim 12 wherein the drive shaft assembly comprises a primary drive shaft connected to the motor and a secondary drive shaft connected to the bracket, the primary and secondary drive shafts being coupled together with a resilient bushing disposed therebetween.

15                   15.     The mixer of claim 12 the pulley gear is supported by the middle arm and the pulley shaft that is generally parallel to the middle arm.

                     16.     The mixer of claim 12 wherein the pulley gear and pulley shaft are at least partially received in a recess disposed in the middle arm and that extends to the driven pulley.

20                   17.     The mixer of claim 12 wherein the clamp assembly comprises a threaded shaft threadably connected to the first arm of the bracket and fixedly connected to a clamp member, the clamp member being rotatively connected to the driven platform.

25                   18.     The mixer of claim 1 wherein further comprising a housing with an opening providing access to the clamp assembly and drive and driven platforms, the housing also comprising a bottom panel,  
                     the mixer further comprising a wedge support disposed beneath the  
30     bottom panel of the housing to support the mixer so that the second and third axes are not vertical and the first axis is not horizontal.

19. A gyroscopic mixer for mixing the contents of a closed container, the mixer comprising:

a motor,

5 a c-shaped bracket comprising a middle leg disposed between a first leg and a second leg, the first leg being connected to a clam assembly, the second leg being connected to a driven pulley,

the motor being directly coupled to the middle leg of the bracket by a drive shaft assembly that imparts rotational movement to the bracket about a first axis without a pulley,

10 the drive shaft assembly passing through a casing that is disposed between the motor and bracket, the casing comprising an annular flange that faces the bracket and which is connected to a stationary annular gear set that also faces the bracket and which is concentric about the first axis,

the bracket being rotatively connected to a pulley gear that is  
15 enmeshed with the annular gear set, the pulley gear moving along the annular gear as the bracket rotates about the first axis,

the pulley gear being connected to a drive pulley by pulley shaft, the pulley gear, pulley shaft and drive pulley defining a second axis, the pulley gear, pulley shaft and drive pulley spinning about the second axis as the pulley gear moves  
20 along the circular gear path of the annular gear,

the drive and driven pulleys being coupled together by a toothed endless belt,

the clamp assembly comprising a threaded shaft threadably connected to the first arm of the bracket and fixedly connected to a clamp member, the clamp  
25 member being rotatively connected to a driven platform, the driven pulley being connected to a drive platform, the driven pulley, drive platform and driven platform being disposed along a third axis, the clamp assembly being capable of adjusting an axial spacing between the driven and drive platforms and providing a clamping force on the container when disposed therebetween,

30 the spinning of the pulley gear and drive pulley about the second axis resulting in spinning of the driven pulley, drive platform and driven platform about the third axis.

20. The mixer of claim 19 further comprising a housing with an opening providing access to the clamp assembly and drive and driven platforms, the housing also comprising a bottom panel,

- the mixer further comprising a wedge support disposed beneath the
- 5 bottom panel of the housing to support the mixer so that the second and third axes are not vertical and the first axis is not horizontal.